

Claims

We claim:

1. A polyester composition comprising:

(a) a polyester; and

5 (b) at least one active methylene compound which is sufficiently acidic to react with acetaldehyde.

2. A polyester composition comprising

(a) a polyester; and

10 (b) at least one active methylene compound, wherein said active methylene compound has a pKa of less than about 25.

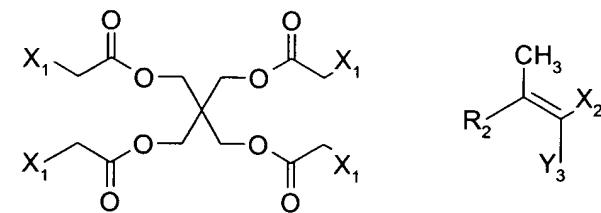
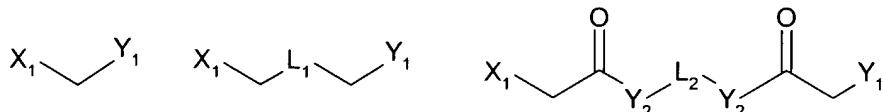
3. The polyester composition of claim 2, wherein said active methylene compound has a pKa of less than about 13.

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4. A polyester composition comprising:

(a) a polyester; and

20 (b) at least one additive that is capable of reacting with acetaldehyde to form a new carbon-carbon bond, said additive being selected from the acyclic active methylene compounds represented by the following formulae:



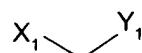
wherein X_1 and Y_1 each denote an electron withdrawing group and are independently selected from aryl, carbamoyl, cyano, heteroaryl, nitro, sulfamoyl, R_1 -CO-, R_1 O-CO-, R_1 NHCO-, $(R_1)_2$ N-CO-, HO- L_2 -NHCO-, (HO- L_2) $_2$ N-CO-, R_1 -O $_2$ S-, R_1 -NHO $_2$ S-, and $(R_1)_2$ NO $_2$ S-, wherein R_1 is selected from C_1 - C_{22} -alkyl, substituted C_1 - C_{22} -alkyl, C_3 - C_8 -cycloalkyl, substituted C_3 - C_8 -cycloalkyl, C_3 - C_8 -alkenyl, C_3 - C_8 -alkynyl, aryl, heteroaryl; wherein L_2 is a divalent linking group selected from C_1 - C_{22} -alkylene, C_3 - C_8 -cycloalkylene, C_1 - C_6 -alkylene-cyclohexylene- C_1 - C_6 -alkylene, C_2 - C_4 -alkylene-O-arylene-O- C_2 - C_4 -alkylene, arylene and -(CH $_2$ CH $_2$ - L_3) $_{1-3}$ -CH $_2$ CH $_2$ -, wherein L_3 is selected from -O-, -S-, -SO $_2$ -, and -N(R_1)-;

wherein Y_2 is selected from -O-, -NH- and -N(R_1)-;

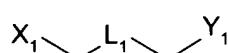
wherein X_2 and Y_3 are independently selected from cyano, C_1 - C_6 -alkylsulfonyl, arylsulfonyl and C_1 - C_6 -alkoxycarbonyl;

wherein R_2 is selected from aryl and heteroaryl.

5. The composition of claim 4, wherein the additive is a compound of the formula

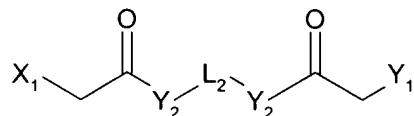


6. The composition of claim 4, wherein the additive is a compound of the formula



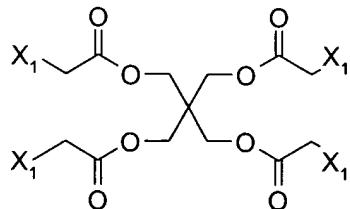
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7. The composition of claim 4, wherein the additive is a compound of the formula



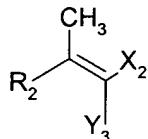
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8. The composition of claim 4, wherein the additive is a compound of the formula



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9. The composition of claim 4, wherein the additive is a compound of the formula



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10. The composition of claim 4, wherein Y2 is -O-.

11. The composition of claim 4, wherein Y2 is -NH-.

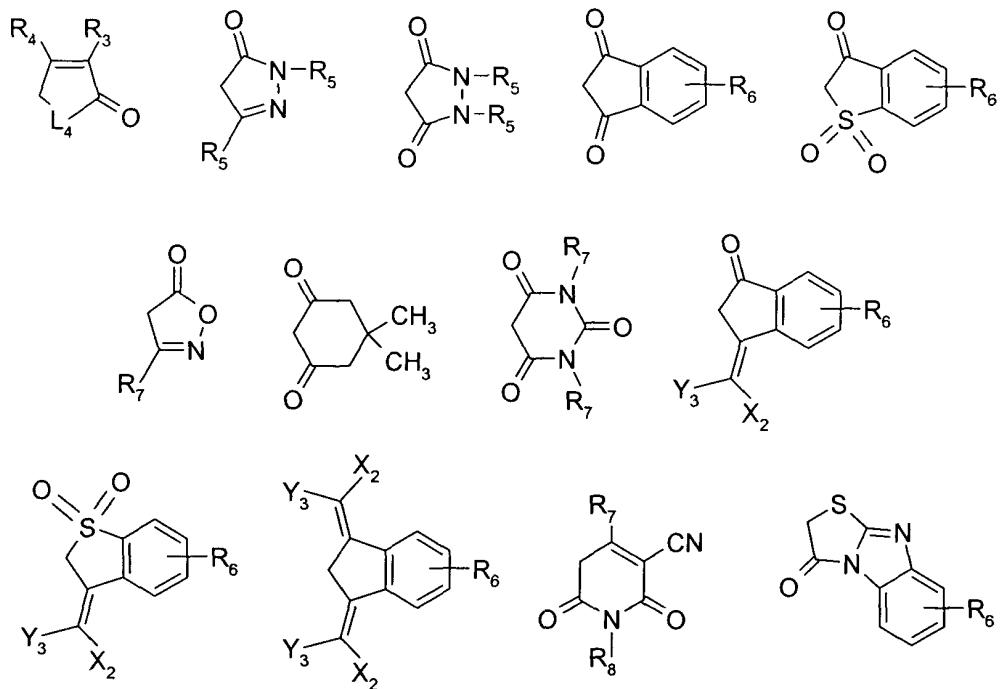
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12. The composition of claim 4, wherein Y2 is -N(R1)-.

13. A polyester composition comprising:

(a) a polyester; and

(b) at least one additive that is capable of reacting with acetaldehyde to form a new carbon-carbon bond, said additive selected from the cyclic active methylene compounds represented by the following formulae:



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wherein R₃ is selected from C₁-C₆-alkoxycarbonyl, cyano, heteroaryl;

wherein R₄ is selected from aryl and heteroaryl;

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wherein R₅ is selected from hydrogen, C₁-C₆-alkyl, substituted C₁-C₆-alkyl, C₃-C₈-cycloalkyl and aryl;

15 wherein R₆ is selected from hydrogen, C₁-C₆-alkyl, C₁-C₆-alkoxy, halogen, cyano, C₁-C₆-alkoxycarbonyl, trifluoromethyl, hydroxy, C₁-C₆-alkanoyloxy, aroyl, C₁-C₆-alkylthio, C₁-C₆-alkylsulfonyl, carbamoyl, sulfamoyl, -NHCOR₉, -NHSO₂R₉, -CONHR₉, -CON(R₉)₂, -SO₂NHR₉ and -SO₂N(R₉)₂; wherein R₉

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is selected from C₁-C₆-alkyl, substituted C₁-C₆-alkyl, C₃-C₈-cycloalkyl and aryl;

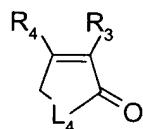
wherein R₇ is selected from hydrogen, C₁-C₆-alkyl, and aryl;

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wherein R₈ is selected from hydrogen, C₁-C₆-alkyl, substituted C₁-C₆-alkyl, C₃-C₈-cycloalkyl, C₃-C₈-alkenyl, C₃-C₈-alkynyl and aryl;

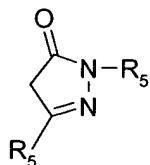
10 wherein L₄ is selected from -O-, -S- and -N(R₁₀)-, wherein R₁₀ is selected from hydrogen, C₁-C₆-alkyl, C₃-C₈-cycloalkyl and aryl.

14. The composition of claim 13, wherein the additive is a compound of the formula



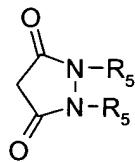
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15. The composition of claim 13, wherein the additive is a compound of the formula



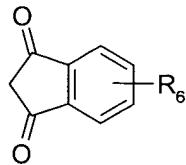
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16. The composition of claim 13, wherein the additive is a compound of the formula

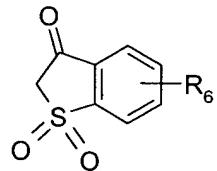


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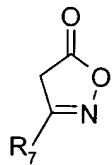
17. The composition of claim 13, wherein the additive is a compound of the formula



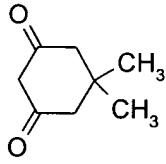
5 18. The composition of claim 13, wherein the additive is a compound of the formula



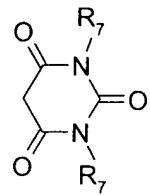
10 19. The composition of claim 13, wherein the additive is a compound of the formula



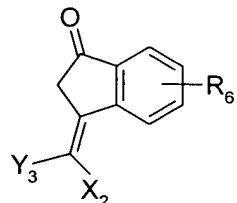
15 20. The composition of claim 13, wherein the additive is a compound of the formula



21. The composition of claim 13, wherein the additive is a compound of the formula

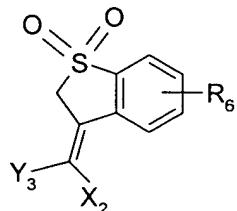


22. The composition of claim 13, wherein the additive is a compound of the formula



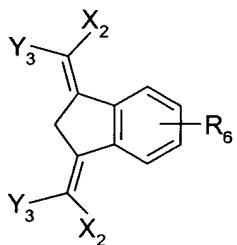
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23. The composition of claim 13, wherein the additive is a compound of the formula



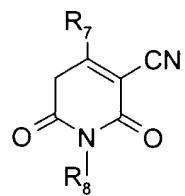
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24. The composition of claim 13, wherein the additive is a compound of the formula



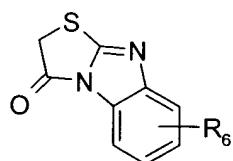
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25. The composition of claim 13, wherein the additive is a compound of the formula



26. The composition of claim 13, wherein the additive is a compound of the formula

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10 27. The composition of claim 1, further comprising at least one compound known to catalyze the reaction between an acidic methylene and an aldehyde.

15 28. The composition of claim 27, wherein the compound is selected from the group consisting of hindered amine light stabilizers (HALS), amino acids, alkali metal salts of mono- and poly-carboxylic acids, tertiary amines, and secondary amines.

20 29. The composition of claim 1, further comprising about 1-99 weight percent of a post-consumer recycled material.

30. The composition of claim 1, further comprising about 0.1 to 10 weight percent of at least one colorant and/or ultraviolet light absorbing compound either admixed or copolymerized in the polyester.

30. The composition of claim 1, further comprising an infrared absorbing compound selected from carbon black, black iron oxide, reduced antimony metal catalyst residues, and infrared absorbing compounds either admixed or copolymerized in the polyester.

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31. The composition of claim 1, further comprising a non-sticking additive selected from lubricants, inorganic mineral composites, and talc.

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32. The composition of claim 13, further comprising at least one compound known to catalyze the reaction between an acidic methylene and an aldehyde.

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34. The composition of claim 32, wherein the compound is selected from the group consisting of hindered amine light stabilizers (HALS), amino acids, alkali metal salts of mono- and poly-carboxylic acids, tertiary amines, and secondary amines.

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35. The composition of claim 13, further comprising about 1-99 weight percent of a post-consumer recycled material.

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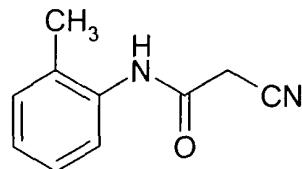
36. The composition of claim 13, further comprising about 0.1 to 10 weight percent of at least one colorant and/or ultraviolet light absorbing compound either admixed or copolymerized in the polyester.

37. The composition of claim 13, further comprising an infrared absorbing compound selected from carbon black, black iron oxide, reduced antimony metal catalyst residues, and infrared absorbing compounds either admixed or copolymerized in the polyester.

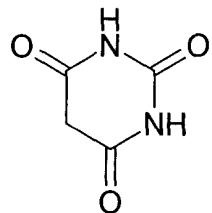
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38. The composition of claim 13, further comprising a non-sticking additive selected from lubricants, inorganic mineral composites, and talc.

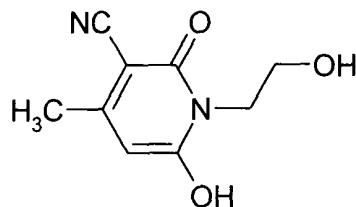
5 39. The composition of claim 13, wherein the additive is a compound of the formula



40. The composition of claim 13, wherein the additive is a compound of the formula



10 , or



15 41. A shaped or formed article comprised of the composition of claim 1.

42. A shaped or formed article comprised of the composition of claim 13.

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43. A method for reducing the amount of acetaldehyde in a polyester composition, which comprises melt-blending into said composition an active methylene compound capable of reacting with said acetaldehyde.